I-77 Feasibility Study (I-85 to Griffith Street)

TIP Project No. FS-0810B

Task Order No. 2 – I-77 HOV/HOT Facility Conversion

Sub-task 2.C, Identification and Development of I-77 HOT Lanes Issues

TECHNICAL MEMORANDUM

(FINAL)

August, 2009

1.0 INTRODUCTION

1.1 PREVIOUS WORK

The Charlotte Region *Fast Lanes* Study, which was completed in May 2009, represented the first stage in a series of technical, institutional and financial analyses required to implement a managed lanes network. This general planning effort identified the additional data and studies to be undertaken on a corridor-by-corridor basis to identify the attributes and operational characteristics of a high-occupancy toll (HOT) facility.

Between 2007 and 2009, the *Fast Lanes* Study Regional Technical Team (RTT) – an interagency committee established to comment on work products developed during the regional planning effort– met to review study progress and discuss preliminary recommendations. RTT members also served as liaisons to their respective agencies. Input from RTT members received during this two-year planning study will be considered in the current feasibility study on conversion of the existing I-77 high-occupancy vehicle (HOV) facility to HOT lanes.

1.2 CURRENT ANALYSIS

This sub-task under Task Order 2 involves a review of the I-77 corridor design attributes, forecasted HOT lane demand, and adopted performance measures in order to identify issues associated with possible conversion of the existing HOV lanes, or an extended HOV facility, to HOT lanes.

Under sub-task 1.C in Task Order 1, a similar review and issues identification will be performed related to extension of the general purpose and HOV lanes to Davidson.

The next section recommends possible resolutions to the preliminary issues related to converting the HOV lanes to a HOT facility.

2.0 POTENTIAL RESOLUTION OF IDENTIFIED ISSUES AND CONSIDERATIONS

Possible solutions to operating issues for I-77 HOV facility conversion are discussed by category in the following sub-sections, based on available data and experiences from other projects operations

2.1 OPERATIONS

Issue:
What operational issues could alter current HOV project limits for tolling?

Recommended Resolution:
Demand for tolling will likely fill the existing HOV lanes to a much higher volume, which will mean having to consider how best to distribute demand on the termini without creating new sources of congestion. This issue sometimes involves carrying a "free" lane beyond the project limits prior to a lane drop, or creating a "free" lane on the left and downstream lane drop on the right. These options will be explored through traffic capacity analysis to create the best balance for demand and performance, and could influence the project limits.

Issue:
What different operation policies would affect current HOV lanes? Who is free? Who pays?

Recommended Resolution:
Typical changes in operation policies include restricting the number of intermediate ingress/egress locations (which can reduce tolling system costs); determining if all eligible vehicles need to have an electronic transponder even if they do not pay (which helps address enforcement issues); and determining if the same exempt users such as motorcycles continue to enjoy HOV lane benefits after the conversion. Typically for HOV projects like I-77 where the corridor is not hyper-congested and has limited peak period HOV use, a policy that allows HOV2+ to travel for free is an appropriate strategy for initial HOT operation. If revenue goals outweigh mobility and rideshare goals, then tightening restrictions to allow only HOV3+ to go free may be feasible, but this approach needs to be supported by local agency stakeholders.

Issue:
What is a minimum acceptable level of toll customers for opening year? Design year?

Recommended Resolution:
The minimum acceptable level of tolled customers can be examined from two perspectives. From a lane utility perspective, enough additional users need to be forecast that the HOT lane appears adequately used during peak demand periods. There are no nationally identified thresholds. About 1000 vehicles per hour would be an appropriate level for an initial conversion year while maximizing use around 1500-1650 vehicles per hour would be an appropriate level of use for the design year. From a revenue perspective, achieving parity with costs would be considered an appropriate threshold for early years of operation.

Issue:
What are the impacts on general traffic at access points if current conditions are changed?

Recommended Resolution:
An examination of traffic merge and weave movements at access points needs to be determined to confirm if impacts to general traffic can be adequately addressed. This analysis will be performed using the traffic simulation tool CORSIM. Traffic conditions will be most important at the project termini.

Issue:
What are the existing and forecasting peak operating conditions?

Recommended Resolution:
Existing and forecasted operations identify a preferred set of operating policies to test for conversion. In particular, intermediate access locations are determined based on where the greatest level of entry and exit needs exist, and can be applied to determine if there is enough demand to support HOT lane conversion. Peak hour and peak period volumes are typically evaluated for this determination.

On March 18, 2009, the I-77 Feasibility Study Technical Steering Committee (TSC) recommended that tolling along the existing HOV facility should be considered only during daytime hours on weekdays, from 5AM to 7PM. Further study will determine if traffic directional splits warrant tolling only in the peak direction.

Issue:
Are there any special enforcement needs? What is the availability of shoulders or monitoring areas?

Recommended Resolution:
While enforcement needs are often prescribed by the respective policing units involved, enforcement needs for any HOT lane relate to the need for dedicated regular patrols and provision of operational strategies and monitoring tools to help them perform this function safely. Selection of transponder technology, regional and interstate interoperability and desired locations where citations are made play a role in determining enforcement provisions, such as shoulders and monitoring areas in the vicinity of the toll readers. For example, if officers prefer to perform monitoring in the vicinity of toll readers in a stationary position, then beacons may be mounted on the toll gantry so the officer knows whether the vehicle transaction involves an active or inactive account. The selected approach simplifies the officer's in-vehicle technology that is required. Discussions with the appropriate enforcement agencies are needed to ascertain the best and most appropriate provisions.

Issue:
What are the incident management needs?

Recommended Resolution:
While incident management can be handled as part of the overall freeway system, additional monitoring will be needed to ensure lane operation is reliable. A variety of strategies are applied on other HOT lanes, for example, contracted services which monitor HOT lane operations and contact the Metrolina Regional Traffic Management

Center (MRTMC) or the State Highway Patrol when an incident occurs. Another strategy involves funding of increased freeway patrol services, such as Incident Management Assistance Patrol (IMAP), along the corridor.

Issue:

What technology tools can be offered to law enforcement agencies for improved enforcement?

Recommended Resolution:
Beacons on toll gantries, in-vehicle systems to give officers updated account data and a variety of other tools can help officers perform enforcement activities.

Issue:
What dedicated level of enforcement should be implemented?

Recommended Resolution:
A determination of enforcement presence is influenced by the length of the HOT lane (i.e., will it cover the extent of the current HOV lanes or this segment plus an extension further north?), number of tolling zones and level of dedicated enforcement that seems appropriate based on discussions with enforcement agency representatives. If the role of enforcement is primarily limited to occupancy infractions for free users and buffer crossing, then the requisite level of enforcement personnel for this length of project is one to two officers per shift in the AM and PM peak periods. Assumptions will be generated for cost estimate purposes following an assessment of the aforementioned controlling factors.

Issue:
What level of transit service can be anticipated?

Recommended Resolution:
Transit in this corridor can be expected to grow commensurate with demographics and commute trips. Existing services may need to be augmented with additional express bus operations further north in the corridor. The impacts to existing transit usage should consider pricing strategies that complement, rather than detract, from transit so that current Charlotte Area Transit System (CATS) ridership is maintained.

Issue:
Are adequate park and ride facilities planned to accommodate additional carpool/transit demand?

Recommended Resolution:
An examination of park-and-ride plans for the corridor will be conducted as part of the agency outreach process with CATS.

Issue:
Are there plans for "special categories" of users (for example, hybrids) who will be allowed free access?

Recommended Resolution:

Other HOT lane projects in the United States have either restricted "exempt" vehicles once tolling was started, or the same "exempt" vehicles were allowed to continue use of the HOT lanes. There are advantages and disadvantages with either approach. For a region's first HOT lane, the number of other changes associated with a conversion may not require the initial removal of exempt vehicles, but this may need to occur in the future or the facility's capacity may be compromised by various "exempt" categories of users, particularly hybrids.

2.2 TOLLING SYSTEM, INTEGRATION AND GOVERNANCE

Issue:
Should existing access be retained or should it become more restrictive to simplify tolling?

Recommended Resolution:
Adding pricing to an existing HOV lane requires a means of segregating tolling zones so they can be effectively implemented and understood by lane users. Since much of the existing project allows open access where users can enter and exit the HOV lane, existing access needs to be re-evaluated and probably made more restrictive, at least in open access sections. A more realistic operational goal will be to examine access frequency at two- to four-mile spacing. Evaluating access should consider minimum weaving criteria to and from existing right-side main lane ramps and identify the best places for access zones to maximize HOT facility demand.

Issue:
How many tolling zones and installations are anticipated for each direction?

Recommended Resolution:

Based on the above target for access spacing, a goal of two and possibly three toll zones are appropriate for the current HOV project limits to achieve the best balance between managing demand and promoting access opportunities. Evaluation of the lane design and operational needs will validate the tolling zones.

Issue:
What type of transponder is under consideration by the North Carolina Turnpike Authority (NCTA) and why?

Recommended Resolution:
NCTA requested transponders to accommodate read/write functionality, and potential firms responding to a Request for Proposals (RFP) recently issued by the agency must indicate the advantages and disadvantages of their responder. NCTA desires read/write functionality because the equipment will be used throughout North Carolina, and this requirement provides flexibility for the agency. Interoperability with EZ-Pass systems requires NCTA to get transponders with read-write capability.

Issue:
Will free users be required to be registered and carry a transponder for ease of enforcement, or will they be allowed continued free use without a transponder?

Recommended Resolution:

Currently there are no restrictions or registration associated with HOV users on the I-77 HOV lanes. New HOT lane projects like those implemented in Miami and planned for Atlanta are requiring all users to be registered even if they are given free transponders and not required to pay. This approach makes on-site enforcement simpler and can reduce false pursuits. At its March 18 meeting, the TSC supported carpools and vanpools using transponders to facilitate HOT lanes enforcement.

Issue:
What enforcement challenges are raised by the adopted transponder type and policy?

Recommended Resolution:
Occupancy enforcement will continue to require on-site surveillance by officers. Adding electronic toll collection to an HOV lane requires the use of transponders by those who are tolled. However, this added requirement means that enforcement officers must distinguish who is either free and having the requisite number of occupants compared to those who have paid. This added challenge can be mitigated to some extent by the consideration of devices at the toll readers and in enforcement vehicles that allow officers to determine who has paid. Another approach is to require all vehicles to carry transponders and self-declare themselves as carpools, which was discussed in the previous issue. Some level of dedicated enforcement will be needed in the field.

Issue:
How will legitimate carpools carrying transponders keep from being charged?

Recommended Resolution:
There are various strategies being applied on other HOT lanes to address single occupant vehicles when they are carpoolers. Transponders can be removable and taken off the windshield on days when drivers have persons on board. A separate account can be set up with a separate transponder for carpoolers, and several upcoming projects are moving toward switchable transponders which let carpoolers self-declare when they have the requisite number of persons. These options will need to be weighed against the adopted transponder approach to determine which one is most appropriate.

Issue:
Because I-77 would be the first HOT lane treatment in the state, what is the anticipated number of transponders needed in circulation for this particular project (assuming there is some lag in the opening of other toll lanes in North Carolina)?

Recommended Resolution:
If I-77 is the first toll facility, the number of transponders in circulation can be expected to be between 10,000 and 20,000 for the opening year, and up to perhaps 50,000 over a five-year period. The number in circulation will depend on whether there is a charge to open and maintain an account, and whether applicants can register a number of vehicles which is typical.

NCTA's draft Operations & Maintenance Plan for the Monroe Connector/Bypass estimates issuance of over 750,000 transponders in the toll project's first 20 years. There also are vehicles with transponders operating within the Charlotte region because of travel along Interagency Group roadways (EZ Pass), Florida toll roads, etc.

Issue:

Will conduits and related toll and detection interface be separate from any NCDOT conduit and ITS installations in the vicinity of this project? Will there be separate power to HOT system components?

Recommended Resolution:
Tolling infrastructure is typically separate from other state ITS installations. This separation occurs because maintenance agreements are often separate, thus complicating the sharing of data on common fiber runs. Separate power often is run to HOT system components for this reason. Options will need to be considered based on NCDOT policies for use of existing conduit and fiber in the corridor.

Issue:
What operation or maintenance agreements with NCTA will need to be developed or executed relevant to a HOT project?

Recommended Resolution:
Operations and maintenance will need to be considered for each of the related components associated with the HOT lane. Some functions could be handled by NCDOT Division 10 while other functions, directly related to the tolling systems, may be better facilitated through NCTA or a contract provider. An interagency agreement is often applied for differentiating the functions and responsibilities involved.

Issue:
What scope requirements will represent needs for integration with the MRTMC and other ITS systems?

Recommended Resolution:

A number of functions, including traffic detection and CCTV, are often shared. Incident management would be handled though the MRTMC and generally accommodated in the same manner all incidents are handled. Other shared functions could include power to field equipment.

Issue:
How will transponders be acquired and where will administration be assumed to take place? What outlets could be established for transponder sales, etc? Will a third party vendor be selected for these functions?

Recommended Resolution:
A variety of outlets are often provided for transponder procurement, including a dedicated sales outlet in the corridor. On-line registration is also popular and easily established. NCTA currently plans for citizens to obtain transponders by mail after signing up for an Electronic Toll Collection (ETC) account on NCTA's website or by signing up for an ETC account at a NCTA customer service center. NCTA also is considering sale of pre-paid transponders at retail outlets.

Issue:
What is a preferred delivery and maintenance approach for tolling systems?

Recommended Resolution:
There are many implementation approaches now being used, from traditional design-bid-build, to design-build (D-B) to unique public-private partnerships (PPP) which for

large capacity facilities can involve concessions in a variety of forms. However, for single HOT lanes in which a fair amount of capacity is provided to transit and carpoolers for free, only the traditional and D-B approaches are probably appropriate.

A maintenance approach could involve one or more agencies (NCDOT and NCTA) and perhaps others in a partnership. Some maintenance responsibilities are often handled through third party contract because of the high level of reliability that must be assured for the monitoring and tolling systems. With a PPP concession or similar approach, maintenance responsibilities are contained within the concession agreement.

Issue:
What are the likely functional requirements for tolling infrastructure? Will this function be tailored or intended to serve other HOT lanes in the region or state?

Recommended Resolution:
The near-term potential for converting I-77 HOV lanes to HOT lanes suggests that the approach needs to consider regional (and statewide) consistency for some tolling infrastructure, but may not need to tackle all situations involved for a regional system. For example, the tolling installations may not need back-up license plate recognition for the limited likelihood that transponders are not read, but this would likely be a need for a regional system. To the extent possible, the assumptions applied in defining feasibility for conversion will consider other regional applications for similar type facilities.

Issue:
What other NCTA projects may be planned or in conflict with an adopted HOT tolling system?

Recommended Resolution:
The study team will examine other projects for potential compatibility or conflicts in the corridor. Most notably, the locations of conduit, traffic detection, CCTV and related devices will need to be identified.

Issue:
Will NCDOT, NCTA or another entity ultimately maintain the hardware and system on State right-of-way?

Recommended Resolution:

The tolling systems will be located on State right-of-way, and access to hardware can pose challenges if not properly located so as to avoid lane closures. The most likely scenario would be NCTA (or their contractor) maintaining the tolling system under interagency agreement. Terms of access and lane closures would need to be considered in this agreement.

Issue:
Who will likely be in charge for tolling policy—NCDOT, CDOT, NCTA, others?

Recommended Resolution:
Tolling policy for a region's first HOT project should involve the affected agencies, including federal, state, local, transit and law enforcement. A policy advisory team in conjunction with a project manager may be appropriate to handle these functions. The project manager would be the agency charged with operations. Their agreement would specify the agencies represented on the policy advisory team who would be involved in

a number of operational policy principles, including who has free or discounted use, tolling policy including minimums and caps, and hours of operation. Candidate advisory team members would include FHWA, NCDOT, NCTA, CDOT, CATS and the State Highway Patrol.

Issue:
What policy issues frame where excess revenues should go and what priorities they should be used for? For a regional system, could excess revenues be used in other corridors? Who should be involved?

Recommended Resolution:
A variety of terms will need clarification in agreements. O&M costs can be widely interpreted, along with excess revenues, so appropriate expenses and uses of revenue should be considered. Excess revenues typically are applied after capital and O&M-related costs are covered. In most other areas, policies for excess revenues are currently directed back into the corridors from which the revenues are gained, but a number of areas are looking at a system-level policy in which excess revenues could be applied to HOT lanes in other corridors within a region. No examples currently exist where excess revenues do not stay within a given region (i.e., revenues are not re-distributed statewide). The appropriate entity to address this policy would be the policy advisory or steering committee as noted above.

Issue:
Would the tolling responsibility shift over time if NCDOT or NCTA assumes responsibility initially?

Recommended Resolution:
The tolling responsibility should be subject to the terms of an interagency agreement in which either party could transfer responsibility under certain terms and conditions. Responsibilities could be reviewed at any time.

Issue:
Is the primary pricing objective related to congestion management or revenue generation?

Recommended Resolution:
Most HOT lane projects implemented so far have focused on congestion management as a primary purpose for implementing pricing. Even in various PPP franchise agreements like I-495 in Virginia and I-595 in Florida, terms stipulate the required level of service or travel speed that must be ensured, and in the case of Florida's agreement, FDOT maintains control over the collection of tolls. Revenue generation can also be an important goal as well. But for managed lanes, there is very low likelihood of the facility's capital and operation costs being recouped from toll revenue alone, meaning that some combination of supplemental funding is needed. Accordingly, implementation of these lanes is focused on providing mobility choice and managing lane throughput rather than attempting to achieve a fully funded toll road that can stand alone financially.

Issue:
What electronic toll collection (ETC) protocols are being planned by NCTA for other toll roads in North Carolina (signage, dedicated lanes at toll plazas, etc.)?

Recommended Resolution:

NCTA's initial three facilities – Triangle Expressway, Monroe Connector-Bypass and Garden Parkway – will be All-Electronic Tolling (AET) projects. These projects will collect tolls using ETC or video (license plate) tolling in an open-road environment. The ETC contract will be awarded in November 2009.

2.3 DESIGN

Issue:
What changes in HOV typical sections are needed for standard restricted buffer, for separate roadway, for non-separated section further at south end?

Recommended Resolution:

For the standard restricted roadway section, the only changes needed include changing the dashed markings into double white stripes and removing diamond markings on the pavement. Improved visibility could be accomplished by narrowing the HOV lane and adjacent leftmost general purpose lane by one foot (to 11 feet each) in order to create a four-foot buffer. A four-foot buffer could also be wide enough to test the placement of traffic channelizers to discourage buffer crossing. These options would not be required, but would be subject to discussion based on operational experiences from other projects. The only change in the separate roadway section would be removal of diamond pavement markings.

On the south end between I-85 and Center City Charlotte, the current and planned section would be investigated for toll feasibility because this section will change with planned improvements to regain design standards lost when the HOV lanes were implemented. Based on a study of each design setting, it may be necessary to defer tolling or not toll the south section until design changes are implemented.

Issue:
Can current plans to rebuild the section between I-85 and Brookshire Freeway be assumed in the concept design for HOT lanes?

Recommended Resolution:
The current plans may need to be implemented before the south section can be tolled, subject to investigations and discussions with agency stakeholders.

Issue:
What conceptual signing or pavement markings are needed?

Recommended Resolution:
Current and proposed federal rulemaking in the new Manual for Uniform Traffic Control Devices (MUTCD) is making significant changes in the requirements for HOT lanes. Signs must be distinguishable and able to communicate with potential customers. The most likely signing needs will include posting of pricing information in advance of access openings, changes to existing guide and regulatory signing, and transitional signing for termini. Some signs will require new pedestals. Existing sign structures may not be sufficient to support the signing changes that would be required.

Issue:
How will pricing be communicated at access locations? Should travel time information also be provided?

Recommended Resolution:
Because the TSC recommended at its March 18, 2009 meeting that the I-77 HOT lanes use dynamic pricing, this information will need to be communicated at least once and preferably twice in advance of each access opening. Both pricing signs would need to be on sign trusses (cantilever or full bridges over the HOV lane and main lanes) placed sufficiently in advance of the decision points. Some projects post comparative travel time information in conjunction with pricing to downstream destinations so that customers know what benefits they are getting. No more than three downstream destinations can be displayed on a sign, but this would likely be sufficient for this corridor.

Issue:
What additional illumination is needed?

Recommended Resolution:
Illumination is needed in the vicinity of termini and access locations where enforcement monitoring is most likely to occur. Continuous illumination is generally not needed and not found on similar projects.

Issue:
What are the needs for traffic detection? Cameras? Other ITS considerations?

Recommended Resolution:
Needs are multi-fold and unrelated to NCDOT's needs for traffic management. The largest potential revenue loss occurs if detectors are not functioning in both the HOT and general purpose lanes in the vicinity of toll zones because these are critical to the function of a dynamic tolling algorithm. Traffic detection also is important if license plate recognition is applied. Cameras associated with license plate recognition will be specific to this application. CCTV for incident management needs to offer continuous coverage.

Issue:
Can existing sign structures be used for tolling or signing needs?

Recommended Resolution:
A cursory evaluation of signing needs will determine whether existing sign structures can be used for signing needs. It is highly unlikely that existing sign structures could be used for tolling systems in the vicinity of the toll zones.

2.4 PHASING

Issue:
What other planned or programmed toll projects in the region or state should be considered in this analysis?

Recommended Resolution:
NCTA is currently studying the Monroe Connector-Bypass and the Garden Parkway in the Charlotte region.

Issue:
When is the scheduled roll-out of these projects?

Recommended Resolution:
NCTA is currently scheduled to open the Monroe Connector-Bypass in 2013 and the Garden Parkway a year later in 2014.

In comparison, the I-77 HOT lanes would require a minimum period of about a year to confirm environmental issues and seek resolution, along with project design. Another year would be required for changes in project design and procurement and installation of tolling systems.

Issue:
How should tolling be rolled out on the existing HOV lanes? On the extension if it proves to be feasible?

Recommended Resolution:
Tolling should be rolled out preferably on the existing HOV lane project and project extension at the same time. This approach makes it easier for the public to adapt to the change in operation for the corridor as a whole. There also are economies of scale for a single tolling system procurement and agreement with the affected enforcement and back-off functions. The length of the existing project is minimally beneficial for tolling, and a longer project would be more viable based on the benefits offered.

Issue:
What are factors influencing how implementation is evaluated (i.e., implementation of transit services, other corridor maintenance or improvement needs)?

Recommended Resolution:
Implementation factors include project readiness opportunities (being able to implement in conjunction with another planned project such as an HOV lane extension further north) and Federal Highway Administration (FHWA) approval to permit HOT vehicles on the I-77 HOV facility. Implementation for transit services would be evaluated based on forecast demand for different horizons, current levels of transit use, available fleet and budgets for transit services and agency feedback regarding current plans and priorities. Implementation will also be determined based on the level of funding required, available funding sources, leverage possible from the forecast revenue stream and opportunities afforded from financing structures reviewed and approved by NCDOT.

2.5 ENVIRONMENTAL

Issue:
What environmental issues are likely to be raised? Are there any environmental justice (EJ) issues?

Recommended Resolution:
While improvements will largely be contained within the freeway median, the application of tolling can generate potential equity and EJ issues. Experience from other projects will need to be compared to the current carpool and transit population to determine potential impacts. Tolling policy may need to be established that discourages crossover mode shifts to single occupancy vehicles.

Issue:
What type of environmental document is likely to be required?

Recommended Resolution:
An Environmental Assessment (EA) will likely be required with a Finding of No Significant Impacts (FONSI) as a likely outcome.

Issue:
What types of mitigation are likely anticipated?

Recommended Resolution:
Mitigation likely to be considered will be a high "floor" to the minimum toll rate during peak transit and carpool periods that set the minimum on parity with current transit fares in the corridor. A credit program or crossover program for low-income transit patrons using the corridor is not likely to be needed, but a demographic review of the corridor would need to be undertaken in the environmental review stage to confirm.

2.6 PUBLIC AFFAIRS

Issue:
How will local communities provide input to project development and related policies?

Recommended Resolution:

The current feasibility study is involving affected federal, state and local agencies who would be most impacted by implementation and operation of a HOT lane. A previous study, the Charlotte Region *Fast Lanes* Study, engaged a regional transportation team including agency stakeholders in the I-77 corridor. This study helped foster understanding of the role and purpose of HOT lanes and policies related to HOT operations. Once issues with feasibility are evaluated in this study, findings will be reviewed with the agency stakeholders and general public as part of the environmental process.

Issue:
Will there be a program to provide incentives (discounts?) to transit riders when they use the lane by operating a single occupant vehicle? Would or could such a program be used as an EJ mitigation measure?

Recommended Resolution:

An evaluation of demand in this feasibility stage will help determine if frequent transit user programs or other credit programs and incentives are appropriate for the I-77 corridor. Typically such programs are implemented to address EJ mitigation. Tolling policies are typically the first approach taken to help support positive modal shifts, or no loss in current modal splits.